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May 12, 1961

Dr. Homer E. Newell, Jr.
Deputy Director, Office of
Space Flight Programs
National Aeronautics and Space Administration
520 H Street, N.W.
Washington 25, D.C.

Dear Dr. Newell:

In response to your letter of April 7, I am enclosing 10 copies of a preliminary proposal for the Mariner B Capsule - the "Multivator". This should be thought of as complementing two other approaches to the analysis of suspended particulate material in the Mars atmosphere that are being presented by JPL - the abbreviated microscope and the gas chromatograph. These devices could all hook on to the same mechanism for collection of the dust.

It is obvious that Mariner B is already a highly stressed mission, and it may become much more so as time goes on. I would urge the relevent committees to consider the advantages and technical possibilities of expanding Mariner B to an expedition of two or three space crafts. If these arrive at intervals of a few days the communication capacity of the mission will be greatly enhanced, apart from the assurance of simple backup. I also have indicated this view in the enclosed letter to Vice President Johnson, as Chairman of the National Aeronautics and Space Council.

The political situation here and internationally, suggests the possibility of sudden directives to expand the program on short notice. I urge that we take great care to have thought out potential missions and experiments and supported their development at least to the limits of imaginable vehicle possibilities, whether or not these are programmed within current plans and budgets. If not, we are bound to be caught with our pants down, and to fail in the best service we can do for our country's goals.

Some specific elaborations that are thought of for the Mariner series include:

(a) Corroborative altitude measurements for the capsule

(b) Radar analysis of the surface

(c) More ample photographic and storage capacity. This could allow for more sophisticated selection of scenes for telemetry, and fuller exploitation of microscopy and other optical methods.

(d) Wider reconnaissance by the capsule - needing longer communication time as well as means of locomotion.

Yours sincerely,

Joshua Lederberg
Professor of Genetics